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An Industrial Hygiene Assessment of Lead in Potable Water Outlets at Rowan University

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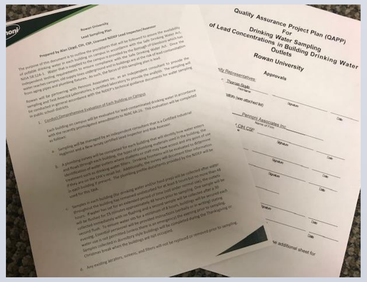
INTRODUCTION

In July 2016, the Office of Environmental Health and Safety (EHS) discovered lead in the water of a number of buildings on the Glassboro campus. This finding triggered the need for a comprehensive study to determine if lead was in the drinking water on the main campus.

Rowan University then partnered with an independent consultant to create a Lead Sampling Plan, collect water samples and to find a certified laboratory to provide water sample analysis.

A comprehensive plumbing survey of the campus also took place to determine how water is supplied to campus and how it is distributed to and throughout each building.



Rowan conducted comprehensive water testing from November 2016 through August 2017.

METHODS

Rowan employed current accepted practices while testing potable water sources. Water was sampled where it entered each building as well as at each potable water outlet in pre-cleaned high density polyethylene (HPDE) 250 milliliter (ml) wide mouth containers that contained nitric acid as a preservative ($HNOH_3$, pH <2).

Water outlets in each building on campus were flushed the afternoon prior to testing. Water samples were collected after the water system was undisturbed for at least 8 hours but no more than 48 hours.

The first sample was collected immediately with no flushing and a second sample was collected after a 30 second flush.

Samples were analyzed by Method 200.8 – Inductively Coupled Plasma Mass Spectrometry (ICP-MS).

RESULTS

At least two samples (A and B) were taken from each identified water sample port and outlet. In some cases, additional samples were taken.

The additional samples were taken until results were obtained that fell below the U.S. Environmental Protection Agency Action Level of 15 µg/L (as defined as greater than or equal to 15.5 µg/L).

The laboratory provided sample results within 48 hours of receipt. An example of the sample results report is as follows:

Client Sample ID: PbBOLA01C — **Lab Sample ID: 460-128067-9**
Date Collected: 02/07/17 10:20 — Matrix: Water
Date Received: 02/07/17 20:15

Method: 200.8 - Metals (ICP/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Lead	62.5		2.0	0.16	ug/L			02/08/17 11:00	1

Client Sample ID: PbBOLA01D — **Lab Sample ID: 460-128067-10**
Date Collected: 02/07/17 10:21 — Matrix: Water
Date Received: 02/07/17 20:15

Method: 200.8 - Metals (ICP/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Lead	5.5		2.0	0.16	ug/L			02/08/17 11:03	1

Over 4,100 potable water samples were collected and analyzed at the end of the comprehensive water sampling project.

CONCLUSION

Since the initial discovery of lead in the drinking water, Rowan University spent approximately $1.2 million dollars on a multi-faceted approach to ensure our drinking water is safe. The multi-faceted approach included the following:

- Installation of ANSI/NSF approved in-line filters on cold water sources in kitchens and bathrooms (this included 1,421 in residence halls alone).
- Installation of 96 filtered bottle filling stations or water fountains.
- Installation of in-line filters in traditional water fountains in academic and campus buildings.
- Installation of 20 new backflow preventers in service lines feeding water to buildings.
- Placement of additional filters on all ice makers in the Athletics Department
- Collection and analysis of over 4,200 water samples. Each potable water outlet had at least two (2) samples collected and analyzed.

NOTE: In-line filters are changed on an annual basis and water filtered bottle fill stations are monitored on a monthly basis.

On September 19, 2017, Dr. Ali Houshmand announced that the campus-wide lead remediation plan was complete and that all drinking water meets state and federal standards for safety.

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